

Recent progress on global spin alignment of $\phi(1020)$ and $K^*(892)$ in heavy-ion collisions

Tuesday 28 June 2022 11:00 (20 minutes)

In non-central heavy-ion collisions (HIC), the large initial angular momentum can induce a non-vanishing polarization for hadrons with non-zero spin. The global spin alignment of vector mesons, quantified by the 00^{th} element of spin density matrix (ρ_{00}), can offer information on the spin-orbital interactions of the QCD medium. Surprisingly large signal of vector meson ρ_{00} compared to hyperon spin polarization poses challenges to the conventional theoretical understanding of polarization in HIC. Preliminary observations from Beam Energy Scan (BES) of large deviations of ρ_{00} from $1/3$ for $\phi(1020)$ mesons can only be explained by introducing the vector meson strong force fields.

In this talk, we will review the details on global spin alignment of $\phi(1020)$ and $K^*(892)$ using high statistics BES data of Au+Au collisions at RHIC and discuss its physics implication.

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Session Classification: 2; Tue-II